

HASTELLOY® C-22® alloy

UNS No. N06022

56Ni^a-22Cr-13Mo-3Fe-3W-2.5Co*-0.5Mn*-0.35V*-0.08Si*-0.01C*^aAs Balance *MaximumFabrication of**HASTELLOY® Corrosion-Resistant Alloys****Technical Papers****Material Safety Data Sheets (MSDS)****Request for Literature****Applicable Specifications****C-22® Trademark****The Statue of Liberty, and this "old soldier"****HASTELLOY® Pipe Fittings - Flanges and Fittings**

A most versatile nickel- chromium- molybdenum- tungsten alloy available today with improved resistance to both uniform and localized corrosion as well as to a variety of mixed industrial chemicals. The C-22 alloy exhibits superior weldability and is used as overlaid filler wire and weld overlay consumables to improve resistance to corrosion.

Principal Features

Laboratory Corrosion Tests

Field Evaluation

Typical Applications

Aqueous Corrosion Data

Resistance to Localized Attack

Thermal Stability

Isocorrosion Curves

Physical Properties

Hardness and Impact Strength

Tensile Data

Fabrication

Welding

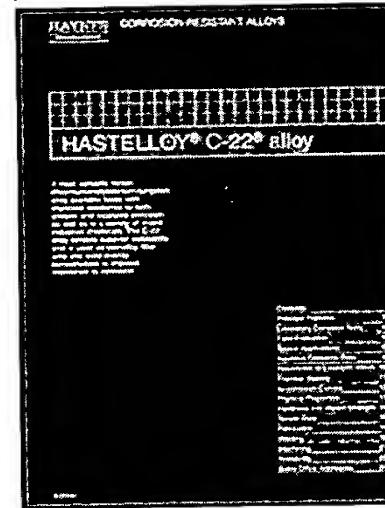
Machining

Availability

Acknowledgment

Health & Safety

Sales Office Addresses

**HASTELLOY® C-22® alloy Product**

Brochure is saved in .pdf format. To view and print the data sheets you may need to download Adobe® Acrobat® Reader™.



H-2019F

For more information send e-mail to: corrosion_alloy_info@haynesintl.com**HAYNES® Home**

APPLICABLE SPECIFICATIONS

This list contains applicable material specifications for Haynes International corrosion-resistant and heat-resistant alloys. It is organized alphabetically by alloy name, with each specification designated by the originator and the product form(s) covered. It should be noted that all forms, process conditions, thermal treatments or sizes are not necessarily available for all alloys. Also, some exceptions may be taken, based upon existing capabilities to produce or qualify material.

The specification to which each product is to be supplied should be included with both the inquiry and order for an alloy.

Some applicable specifications may not have been listed at the time of this printing. The fact that a specification is not listed does not mean that it is unavailable. Normally, the latest revision of each specification will apply.

H-1034L Applicable Specifications .pdf file [H1034L.pdf](#).
You may need to download [Adobe® Acrobat® Reader™](#).

| HASTELLOY® Products | HAYNES® Products | Specialty Products |
|--|--|--|
| <ul style="list-style-type: none"> • B alloy • B-2 alloy • B-3® alloy • C-4 alloy • C-22® alloy • C-276 alloy • C-2000® alloy • G-3 alloy • G-30® alloy • G-50® alloy • H-9M™ alloy • N alloy • S alloy • W alloy • X alloy | <ul style="list-style-type: none"> • 25 alloy • R-41 alloy • HR-120® alloy • HR-160® alloy • 188 alloy • 214™ alloy • 230® alloy • 230-W™ alloy • 242™ alloy • 263 alloy • 556™ alloy • 617 alloy • 625 alloy • 625SQ™ alloy • 718 alloy • X-750 alloy • 6B alloy | <ul style="list-style-type: none"> • MULTIMET® alloy • Ti-3Al-2.5V alloy • ULTIMET® alloy • Waspaloy alloy |

HASTELLOY® B alloy (UNS N10001) Metal No. 2620

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|-----------|--------------------------|------------------------|
| ASME/ASTM | SB 333/B 333 | Sheet, Plate and Strip |
| ASME/ASTM | SB 335/B 335 | Rod |
| ASME/ASTM | SB 619/B 619 | Welded Pipe |
| ASME/ASTM | SB 622/B 622 | Seamless Pipe and Tube |
| ASME/ASTM | SB 626/B 626 | Welded Tubes |
| ASME/ASTM | SB 366/B 366 | Fittings |
| ASME | Section III, Class 3 | All Forms |
| ASME | Section VIII, Division 1 | All Forms |
| ASME | Section VIII, Division 2 | All Forms |

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|------|---------------------|----------------------------------|
| ASME | SFA 5.11 (ENiMo-1) | Covered Welding Electrodes |
| AWS | A 5.11 (ENiMo-1) | Covered Welding Electrodes |
| ASME | SFA 5.14 (ERNiMo-1) | Bare Welding Rods |
| AWS | A 5.14 (ERNiMo-1) | Bare Welding Rods |
| NACE | MR 01-75 | Metallic Materials for Oil Field |

HASTELLOY® B-2 alloy (UNS N10665) Metal No. 2665

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| | | |
|-----------|--------------------------|---|
| ASTM | B 564 | Forgings |
| ASME/ASTM | SB 333/B 333 | Sheet, Plate and Strip |
| ASME/ASTM | SB 335/B 335 | Rod |
| ASME/ASTM | SB 619/B 619 | Welded Pipe |
| ASME/ASTM | SB 622/B 622 | Seamless Pipe and Tube |
| ASME/ASTM | SB 626/B 626 | Welded Tubes |
| ASME/ASTM | SB 366/B 366 | Fittings |
| ASME | Section III, Class 3 | All Forms |
| ASME | Section VIII, Division 1 | All Forms |
| ASME | Section VIII, Division 2 | All Forms |
| ASME | B16.5 | Pipe Flanges and Flanged Fitting: |
| ASME | B16.34 | Valves-Flanged, Threaded, and Welding Ends |
| ASTM | B 462 | Pipe Flanges, Forged Fittings |
| ASTM | B 472 | Billets and Bars for reforging |
| ASME | SFA 5.11 (ENiMo-7) | Covered Welding Electrodes |
| AWS | A 5.11 (ENiMo-7) | Covered Welding Electrodes |
| ASME | SFA 5.14 (ERNiMo-7) | Bare Welding Rods |
| AWS | A 5.14 (ERNiMo-7) | Bare Welding Rods |
| DIN | 17744 No. 2.4617 | All Forms |
| DIN | NiMo28 | All Forms |
| DIN | 2.4615 (SG-NiMo27) | Bare Welding Rods |
| DIN | 2.4616 (EL-NiMo29) | Covered Welding Electrodes |
| TUV | Werkstoffblatt 436 | All Forms |
| TUV | Kennblatt 2663.02 | Welding Wire |
| TUV | Kennblatt 2664.02 | Welding Rod |
| TUV | Kennblatt 2662.02 | Covered Welding Electrodes |

HASTELLOY® B-3® alloy (UNS N10675) Metal No. 2675

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|-----------|------------------------------------|---|
| ASME/ASTM | SB 333/B 333 | Sheet, Plate and Strip |
| ASME/ASTM | SB 335/B 335 | Rod |
| ASME/ASTM | SB 619/B 619 | Welded Pipe |
| ASME/ASTM | SB 622/B 622 | Seamless Pipe and Tube |
| ASME/ASTM | SB 626/B 626 | Welded Tube |
| ASME/ASTM | SB 564/B 564 | Forgings |
| ASME/ASTM | SB 366/B 366 | Fittings |
| ASTM | B 462 | Pipe Flanges, Forged Fittings |
| ASTM | B 472 | Billets and Bars for Reforging |
| ASME | Code Case 2140 (Sec. VIII, Div. 1) | All Forms |
| ASME | Section VIII, Division 1 | All Forms |
| ASME | B16.5 | Pipe Flanges and Flanged Fitting: |
| ASME | B16.34 | Valves-Flanged, Threaded, and Welding Ends |
| ASME | SFA 5.11 (ENiMo-10) | Covered Welding Electrodes |
| AWS | A5.11 (ENiMo-10) | Covered Welding Electrodes |
| ASME | SFA 5.14 (ERNiMo-10) | Bare Welding Rods |
| AWS | A5.14 (ERNiMo-10) | Bare Welding Rods |

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| DIN | 2.4696 (EL-NiMo28Cr) | Covered Welding Elec trodes |
| DIN | 2.4695 (SG-NiMo30Cr) | Bare Welding Rods |
| DIN | 17744 No. 2.4600 | All Forms |
| DIN | NiMo29Cr | All Forms |
| TUV | Werkstoffblatt 517 | All Forms |
| TUV | Kennblatt 7615.00 | Welding Wire |
| TUV | Kennblatt 7616.00 | Welding Rod |
| TUV | Kennblatt 7617.00 | Covered Welding Electrodes |

HASTELLOY® C-4 alloy (UNS N06455) Metal No. 2455

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| ASME/ASTM | SB 366/B 366 | Fittings |
| ASME/ASTM | SB 574/B 574 | Rod |
| ASME/ASTM | SB 575/B 575 | Plate, Sheet and Strip |
| ASME/ASTM | SB 619/B 619 | Welded Pipe |
| ASME/ASTM | SB 622/B 622 | Seamless Pipe and Tube |
| ASME/ASTM | SB 626/B 626 | Welded Tubes |
| ASME | Section VIII, Division 1 | All Forms |
| ASME | Section VIII, Division 2 | All Forms |
| ASME | SFA 5.11 (ENiCrMo-7) | Covered Welding Electrodes |
| AWS | A 5.11 (ENiCrMo-7) | Covered Welding Electrode s |
| ASME | SFA 5.14 (ERNiCrMo-7) | Bare Welding Rods |
| AWS | A 5.14 (ERNiCrMo-7) | Bare Welding Rods |
| DIN | 17744 No. 2.4610 | All Forms |
| DIN | NiMo16Cr16Ti | All Forms |
| DIN | 2.4611 (SG-NiMo16Cr16Ti) | Bare Welding Rods |
| DIN | 2.4612 (EL-NiMo15Cr15Ti) | Covered Welding Elec trodes |
| TUV | Werkstoffblatt 424 | All Forms |
| TUV | Kennblatt 2666.02 | Welding Wire |
| TUV | Kennblatt 2667.02 | Welding Rod |
| TUV | Kennblatt 2665.02 | Covered Welding Electrodes |

HASTELLOY® C-22® alloy (UNS N06022) Metal No. 2277

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| ASME/ASTM | SB 366/B 366 | Fittings |
| ASME/ASTM | SB 574/B 574 | Rod |
| ASME/ASTM | SB 575/B 575 | Plate, Sheet, Strip |
| ASME/ASTM | SB 619/B 619 | Welded Pipe |
| ASME/ASTM | SB 622/B 622 | Seamless Tubing |
| ASME/ASTM | SB 626/B 626 | Welded Tubing |
| ASME/ASTM | SB 564/B 564 | Forgings |
| ASTM | B 462 | Pipe Flanges, Forged Fittings |
| ASTM | B 472 | Billets and Bars for Reforging |
| ASME | Code Case N-621 (Sec. III, Cl 1) | Nuclear -All Forms |
| ASME | Code Case 2226 (Sec. I) | All Forms |
| ASME | Section III, Class 2 | Nuclear - All Forms |
| ASME | Section III, Class 3 | Nuclear - All Forms |
| ASME | Section VIII, Division 1 | All Forms |
| ASME | B16.5 | Pipe Flanges and Flanged Fitting: |
| ASME | B16.34 | Valves-Flanged, Threaded, and Welding Ends |
| AWS | A5.11 (ENiCrMo-10) | Covered Welding Electrode s |
| ASME | SFA 5.11 (ENiCrMo-10) | Covered Welding Electrodes |
| AWS | A5.14 (ERNiCrMo-10) | Bare Welding Rods |
| ASME | SFA 5.14 (ERNiCrMo-10) | Bare Welding Rods |
| DIN | 17744 No. 2.4602 | All Forms |

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| DIN | NiCr21Mo14W ✓ | All Forms |
| DIN | 2.4635 (SG-NiCr21Mo14W) | Bare Welding Rods |
| DIN | 2.4638 (EL-NiCr21Mo14W) | Covered Welding Electrodes |
| TUV | Werkstoffblatt 479 | All Forms |
| TUV | Kennblatt 4535.00 | Welding Wire |
| TUV | Kennblatt 4536.00 | Welding Rod |
| TUV | Kennblatt 4534.01 | Covered Welding Electrodes |
| NACE | MR-01- 75 | Metallic Materials for Oil Field |

HASTELLOY® C-276 alloy (UNS N10276) Metal No. 2760

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| ASME/ASTM | SB 366/B 366 | Fittings |
| ASME/ASTM | SB 574/B 574 | Rod |
| ASME/ASTM | SB 575/B 575 | Plate, Sheet and Strip |
| ASME/ASTM | SB 619/B 619 | Welded Pipe |
| ASME/ASTM | SB 622/B 622 | Seamless Pipe and Tube |
| ASME/ASTM | SB 626/B 626 | Welded Tubes |
| ASME/ASTM | SB 564/B 564 | Forgings |
| ASTM | B 462 | Pipe Flanges, Forged Fittings |
| ASTM | B 472 | Billets and Bars for Reforging |
| ASME | Section III, Class 2 | Nuclear - All Forms |
| ASME | Section III, Class 3 | Nuclear - All Forms |
| ASME | Section VIII, Division 1 | All Forms |
| ASME | Section VIII, Division 2 | All Forms |
| ASME | B16.5 | Pipe Flanges and Flanged Fittings |
| ASME | B16.34 | Valves-Flanged, Threaded, and Welding Ends |
| ASME | SFA 5.11 (ENiCrMo-4) | Covered Welding Electrodes |
| AWS | A 5.11 (ENiCrMo-4) | Covered Welding Electrodes |
| ASME | SFA 5.14 (ERNiCrMo-4) | Bare Welding Rods |
| AWS | A 5.14 (ERNiCrMo-4) | Bare Welding Rods |
| DIN | 17744 No. 2.4819 | All Forms |
| DIN | NiMo16Cr15W | All Forms |
| DIN | 2.4886 (SG-NiMo16Cr16W) | Bare Welding Rods |
| DIN | 2.4887 (EL-NiMo15Cr15W) | Covered Welding Electrodes |
| TUV | Werkstoffblatt 400 | All Forms |
| TUV | Kennblatt 320.01 | Welding Rod |
| TUV | Kennblatt 319.03 | Covered Welding Electrodes |
| Military | Mil-N-24390B | Cold -Reduced Bar |
| NACE | MR-01- 75 | Metallic Materials for Oil Field |

HASTELLOY® C-2000® alloy (UNS N06200) Metal No. 2316

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| | | |
|-----------|-------------------------------------|-----------------------------------|
| ASME/ASTM | SB 564/B 564 | Forgings |
| ASME/ASTM | SB 574/B 574 | Rod |
| ASME/ASTM | SB 575/B 575 | Plate, Sheet and Strip |
| ASME/ASTM | SB 619/B 619 | Welded Pipe |
| ASME/ASTM | SB 622/B 622 | Seamless Pipe and Tubing |
| ASME/ASTM | SB 626/B 626 | Welded Tube |
| ASME/ASTM | SB 366/B 366 | Fittings |
| ASTM | B 163 | HE Tubes & Condenser Tubes, Seami |
| ASTM | B 462 | Pipe Flanges, Forged Fittings |
| ASTM | B 472 | Billets and Bars for Reforging |
| ASME | Code Case 2240 (Sec. VIII , Div. 1) | All Forms |
| ASME | Code Case 2337 (F=44) | Bare Welding Rods |
| ASME | Code Case 2338 (F=44) | Covered Welding Electrodes |

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| ASME | B16.5 | Pipe Flanges and Flanged Fitting: |
| ASME | B16.34 | Valves-Flanged, Threaded, and Welding Ends |
| AWS | A5.14 (ERNiCrMo-17) | Bare Welding Rods |
| AWS | A5.11 (ENiCrMo-17) | Covered Welding Electrodes |
| DIN | 17744 No. 2.4675 | All Forms |
| DIN | NiCr23Mo16 Cu | All Forms |
| DIN | 2.4699 (EL-NiCr23Mo16Cu) | Covered Welding Electrodes |
| DIN | 2.4698 (SG-NiCr23Mo16Cu) | Bare Welding Rods |
| TUV | Werkstoffblatt 539 | All Forms |
| TUV | Kennblatt 9679.00 | Welding Wire |
| TUV | Kennblatt 9678.00 | Welding Rod |
| TUV | Kennblatt 9677.00 | Covered Welding Electrodes |

HASTELLOY® G-3 alloy (UNS N06985) Metal No. 2985

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| ASME/ASTM | SB 366/B 366 | Fittings |
| ASME/ASTM | SB 581/B 581 | Bar |
| ASME/ASTM | SB 582/B 582 | Sheet, Plate and Strip |
| ASME/ASTM | SB 619/B 619 | Welded Pipe |
| ASME/ASTM | SB 622/B 622 | Seamless Pipe and Tube |
| ASME/ASTM | SB 626/B 626 | Welded Tubes |
| ASME | Section VIII, Division 1 | All Forms |
| ASME | SFA 5.14 (ERNiCrMo-9) | Bare Welding Rods |
| ASME | SFA 5.11 (ENiCrMo-9) | Covered Welding Electrodes |
| AWS | A 5.11 (ENiCrMo-9) | Covered Welding Electrodes |
| AWS | A 5.14 (ERNiCrMo-9) | Bare Welding Rods |
| NACE | MR 01- 75 | Metallic Materials for Oil Field |

HASTELLOY® G-30® alloy (UNS N06030) Metal No. 8103

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| | | |
|-----------|--------------------------|---|
| ASME/ASTM | SB 366/B 366 | Fittings |
| ASME/ASTM | SB 581/B 581 | Bar |
| ASME/ASTM | SB 582/B 582 | Sheet, Plate and Strip |
| ASME/ASTM | SB 619/B 619 | Welded Pipe |
| ASME/ASTM | SB 622/B 622 | Seamless Pipe and Tubing |
| ASME/ASTM | SB 626/B 626 | Welded Tube |
| ASTM | B 462 | Pipe Flanges, Forged Fittings |
| ASTM | B 472 | Billets and Bars for Reforging |
| ASME | Section III, Class 2 | Nuclear - All Forms |
| ASME | Section III, Class 3 | Nuclear - All Forms |
| ASME | Section VIII, Division 1 | All Forms |
| ASME | B16.5 | Pipe Flanges and Flanged Fitting: |
| ASME | B16.34 | Valves-Flanged, Threaded, and Welding Ends |
| ASME | SFA 5.14 (ERNiCrMo-11) | Covered Welding Electrodes |
| ASME | SFA 5.11 (ENiCrMo-11) | Bare Welding Rods |
| AWS | A5.14 (ERNiCrMo-11) | Bare Welding Rods |
| AWS | A5.11 (ENiCrMo-11) | Covered Welding Electrodes |
| DIN | No. 2.4603 | All Forms |
| DIN | NiCr30FeMo | All Forms |
| NACE | MR-01- 75 | Metallic Materials for Oil Field |

HASTELLOY® G-50® alloy (UNS N06950) Metal No. 8511

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